

SEQUENCE LISTING

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<120> BIOMARKERS AND TARGETS FOR DIAGNOSIS, PROGNOSIS AND
MANAGEMENT OF PROSTATE, BREAST AND BLADDER CANCER

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<160> 89

<170> PatentIn Ver. 2.1

<210> 1

<211> 391

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 1

gtccagtcgc tcagaaattt cctttgatgc tttgaagta tctctcttgg atctgcttcc 60
tccttatcgt ctctacatcc caagaacaga gaggagtcct tctttatctt cttatctctg 120
tttttagcac agtatttgat atatagtgtg gatactataa atgcttgcta aactttgtca 180
aattccacat ttttaaaata aaaatgagaa tgagcttgta gtcaacatgg cgtttgtaag 240
tttgagtcct atatatggta gatatacata tttttaaatc taagtgaac ttttctcttg 300
attatcttga aatgccttat catctccaca tttgctgtag gcagtagttt agtgggtcca 360
ttatatctgc cacactgatt gtcttaaata a 391

<210> 2

<211> 614

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 2
cagtagtggc cccaaatgcc aggctgcact gatattttatt ggatataaga caaaggggca 60
gggtaaggaa tgtgaaccat ctccaataat aggtaaggtc acatgggtca tgtgtccact 120
ggacaggggg cccttccctg cctggcagca gaggcagaga gagagagaag agagagagac 180
agcttatgcc attattttctg catatcagac atttagtact ttcactaatt tgctcctgct 240
atctaaaagg cagagccagg tatacaggat ggaacatgaa agcggactag gagcgtgacc 300
actgaagcac agcatcacag ggagacaggc ctctggatac tggccggggg gccctgactg 360
atgtcaaggc cctccacaag agtggaggag ttagtcttcc tctaaactcc cccgggggaa 420
agggaggctc cttttcccag tctgctaagt agtgggtgtt tttccttgac actgatgcta 480
ctgctagacc atggtccact ttgcaacagg catcttccca gacactggtg ttactgctag 540
accaagccct ctggtggccc tgtccgggca taagagaagg ctcacactct tgtcttctgg 600
ccacttcgca ctat 614

<210> 3
<211> 757
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 3
acaacgacac attcaggagt taaatattta tcatcaaaca ttggattttt ccttaacgct 60
agagattgct acaaattctt tgaaggggtct caatggcttc aggctaagaa gagattttctc 120
cctgttataa gcagcaagac aaattagcca tttcactctc aaacttcact aatgatcaca 180
ttctttccaa aaggaactct agaagaccaa atgccccgag ttaagaacat caaaactaac 240
catctgaaga aacttcccaa gtgtaagact ctgccattaa aacattaccg agagggggact 300
caaacagtct tttcttccct ttgtcgtgtt tctttgctcc cagaccaag gcacttggcg 360
gacagtactt gatacaataa tttaaaaagc accactccct tcccactttg taaataccca 420
gaactctaata tggaccaccc tgaagcttag gacctaccag ccatacaaat agtaaaactct 480
gtccacgatt cactcatctg tgtattttct atagatgttt actaggcggt tggtatataa 540
aaataccccg gccaggcacg gtgggtcacg cctgtaatcc cagcactttg ggaggtgggt 600
ggatcacctg aggtcgggag ttcgagacca gcctgaccag catggtggaa ccccatctc 660
tactaaaaaac acaaaaaatt agccgggctg ggtggcacat gcctgtaatc ccagctactc 720

aggaggctga ggcggagaat tgcttgaacc cggaagg

757

<210> 4

<211> 673

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 4

caggacacag agtaagatac ccactgactt cttgtggtct acttcctggg tgttgtttca 60
atgggctttg ttataacagg actagtcttc tgtaaataca acttggtaaa taggatgaaa 120
cataactttg cgacaattca gtagaaatag gcatacaaac ctgggcctga tgacactcac 180
ctcccccttg ctataaacat taccctacct gttaagtcag taatcctttg ggagagcgct 240
tactgagtat ctatgatatg caaagaccaa agaccgaggg ggatccctgg tgtagagcaa 300
gcacacacct ggttattagc tacctgccac cctgctgggc atgcaacata cattgtctca 360
aattctaacc accctgcaag gcaagcttcc ttgttctttt aaagaagaaa agtagaccag 420
caagattgat ttgctcaaga ttacacagcc tggaatcttg tcatgggcat gtctgactct 480
gatagcaata ccctcaaaga aactgtcaga gaagactcaa taagaagaaa gttgagatac 540
agaaaccaac aggagaaggt aattcagaaa ttcaaacaga gtgggtgtga tgggaagaat 600
tcattaataa gaaggtacct ctgtagaaaa atcttaccag acagtctgga agtgaaggaa 660
acagccaata gtc 673

<210> 5

<211> 358

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 5

gtcactgcac attaagatgg agcccgaaga gccacactcc gagggggcat cgcaggagga 60
tggggctcaa ggtgcctggg gctgggcacc cctaagtcac ggctctaagg agaaagctct 120
cttcctgccc ggcgagccc tcccccccc ccg gatcccc gtgctttccc gagaggggag 180
gaccagagac cggcagatgg ctgcagcgct ctcactgcc tgggtcccaga tgccagtgc 240
tttcgaggat gtggccttgt acctctccc ggaggagtgg ggacggctgg accacacgca 300

gcagaacttc tacaggggaat gtcctgcaga agaaaaatgg gctgtcactg ggctttcc 358

<210> 6

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 6

cacagatgta gcttcctcac tgg 23

<210> 7

<211> 610

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 7

ctggagtaca atgtcagtggt ttacactgtc aaggatgaca aggaaagtgt ccctatctct 60
gataccatca tcccagctgt tcctcctccc actgacctgc gattcaccaa cattgggtcca 120
gacaccatgc gtgtcacctg ggctccaccc ccatccattg atttaaccaa cttcctgggtg 180
cgttactcac ctgtgaaaaa tgaggaagat gttgcagagt tgtcaatttc tccttcagac 240
aatgcagtggt tcttaacaaa tctcctgcct ggtacagaat atgtagtgag tgtctccagt 300
gtctacgaac aacatgagag cacacctctt agaggaagac agaaaacagg tcttgattcc 360
ccaactggca ttgacttttc tgatattact gccaaactctt ttactgtgca ctggattgct 420
cctcgagcca ccatcactgg ctacaggatc cgccatcatc ccgagcactt cagtgggaga 480
cctcgagaag atcgggtgcc ccactctcgg aattccatca ccctcaccaa cctcactcca 540
ggcacagagt atgtggtcag catcgttgct cttaatggca gagaggaaag tcccttattg 600
attggccaac 610

<210> 8

<211> 1649

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

Primer

<400> 8

cggcagccag cctattcttt ggccgggtcg gtgcgagtgg tcggctgggc agagtgcacg 60
 ctgcttggcg ccgcaggtga tcccgccgtc cactcccggg agcagtgatg ttgggcaact 120
 ctgcgccggg gcctgcgacc cgcgaggcgg gctcggcgct gctagcattg cagcagacgg 180
 cgctccaaga ggaccaggag aatatcaacc cggaaaaggc agcgcccgct caacaaccgc 240
 ggaccggggc cgcgctggcg gtactgaagt ccgggaaccc gcgggggtcta gcgcagcagc 300
 agaggccgaa gacgagacgg gttgcacccc ttaaggatct tcctgtaaat gatgagcatg 360
 tcaccgttcc tccttgghaa gcaaacagta aacagcctgc gttcaccatt catgtggatg 420
 aagcagaaaa agaagctcag aagaagccag ctgaatctca aaaaatagag cgtgaagatg 480
 ccctggcttt taattcagcc attagtttac ctggaccag aaaaccattg gtccctcttg 540
 attatccaat ggatggtagt tttgagtcac cacatactat ggacatgtca attgtattag 600
 aagatgaaaa gccagtgagt gttaatgaag taccagacta ccatgaggat attcacacat 660
 accttaggga aatggagggt aaatgtaaac ctaaagtggg ttacatgaag aaacagccag 720
 acatcactaa cagtatgaga gctatcctcg tggactgggt agttgaagta ggagaagaat 780
 ataaactaca gaatgagacc ctgcatttgg ctgtgaacta cattgatagg ttcctgtctt 840
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 acacagtcac gggacaaaagc tggcctgaat cattaatacg aaagactgga tataccctgg 1260
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 acccaccaga gacactaaat ctgtaacaat gaaagactgc ctttgttttc taagatgtaa 1440
 atcactcaaa gtatatgggtg tacagttttt aacttaggtt ttttaatttta caatcatttc 1500
 tgaatacaga agttgtggcc aagtacaaat tatggatatct attacttttt aaatgggttt 1560
 aatttgata tcttttgtat atgtatctgt cttagatatt tggctaattt taagtgggtt 1620

tgttaaagta ttaatgatgc cagctgccg

1649

<210> 9

<211> 175

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 9

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ttctggggct cttactataa aaggggacca actctccctt tgtcatatct tgtttctgat 120

gacaaaaaat aacacattgt taaaattgta aaattaaaac atgaaatata aatta 175

<210> 10

<211> 166

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 10

gtttcgctcc acattcatcc tttcttactg ggactgatg ttgagagcat caggcagggt 60

ataatgttat gttgcagtaa caaacaccct caatatctca gtggcttaaa atgacaacga 120

tctttttttt gtttgtttgt ttatgctcta tatcaccag ggatca 166

<210> 11

<211> 107

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 11

tgctctgccc cacatctgaa caagctaata agaaagcccg atgttctttc ctttggtgcc 60

attgggaaat tcaaaccatg cacaactctg cctgtatgaa gggcgca 107

<210> 12

<211> 183

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 12

caaccttagc ccctctcctc ttcttcacga tgccattctg ccatttctgt tttgtggtag 60
acagggttggc ccaggcactc taaggcccag gctggcacag gttggcccag gcacttcaag 120
cctaagtcca ttacagttt ctattccatc tcttcctaaa gaagaggaga ggggctaagg 180
ttg 183

<210> 13

<211> 92

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 13

aaacaaacgt ctttgggtaa aattctatctt cttttaatgt tttaaaatat ttgtagtcac 60
taattgtaag tcatattcct ctttgtccag ct 92

<210> 14

<211> 182

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 14

gatgtaatta aagctgtaga tgagggctat cgactgccac ccccatgga ctgcccagct 60
gccttgatc agctgatgct ggactgctgg cagaaagaca ggaacaacag acccaagttt 120
gagcagattg ttagtattct ggacaagctt atccggaatc ccggcagcct gaaggatcat 180
ca 182

<210> 15

<211> 174

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 15
 gccaaatggg tagcattggt gctcggcctt ctagtctgcc agtaggaaag tccaaccatt 60
 aggtcgggga agaaggggtct ggatttggtt gacaatgggt ggatggggga tagaagcaga 120
 gagagagagg gagggcagct caagggtatc ttgccccact ctgtttatgc tgat 174

<210> 16
 <211> 132
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 16
 cacctaacaa tatatcaatt ttttaaaaat ggaatttctt atgccctctt tatttatgga 60
 catgtatgtc cataatggga gacgttttct ttggactgat gcttgaatca gtgggtgctt 120
 ggcatgtctg at 132

<210> 17
 <211> 135
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 17
 cagacacaca catgcacacc attctagaat gcttccttaa aagaaggagg gttgccctag 60
 tctcaaaatc ttaaagcca tatgtgcatt gatttctgca caggtaggca atttgtgatt 120
 ttatttttcc ttatg 135

<210> 18
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 18
 cttcatggca ggactcgggt tggg 24

<210> 19
 <211> 471

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 19

gccccaaatg ccaggctgca ctgatctcat gtctgtgtca ctggaaccaa caggcctgcc 60
tcaaccactg tccacctgca catctgagag gctggcaggt caccagggt agccgtgcac 120
gtcagttcct gggaagaaag tagaatgtga atcatcttct ctcaaacgcc tatcaaaagc 180
ccagctgaga tcaataattt ggtgggagaa cagacctgta ccaattggct cgggtgtttgg 240
tgggggtattg taaatttggg tcctaaatca aagggtatcc ctagaaggac ccacatggaa 300
tggcctcctc ctaaaccatcc ctccatgttg gtacttcctg actcttttcc agcaatctca 360
aagcacaaga agcagtgggtg ggaacccagg cctggcatct tgttggagcc catgggttggg 420
gggtaggagc aactttacag gccatcaatt atgccctat acgcacctcc c 471

<210> 20

<211> 209

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 20

gccctttata aatacgatta gtatggagaa ttgatacatt aacagttagc tttataaatt 60
gacagatttc taaattaacc tatgggtccac aaatcaagtt ctatcactat ttctgtccac 120
caaaatcagt gatgaagcct ctcccacact aaatgaagag tggcgaggga cagaattcca 180
cttgtcttcc ttttgctgca ctaactaca 209

<210> 21

<211> 407

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 21

caagcagcat agcctctctg aaactcaatt tcctcacatt tataaatgag cttttatatt 60
atttacaac ctacctcata gagcagggtg caggctacat gagaagggtgc aagttcaatg 120

ccaagcaggg tcctagtatt taataaaagc tcaataaata ttcattttct tctttccttc 180
tcttacttga agtataacat ttgataatga attttctcat tgcaacaata acacccttc 240
cactgagggg tttgtatccc tgcttaagaa gctattagta ttctacagca ggactcacc 300
cacacaatct tggcaggaat acatccctct acctctctgg tcaataacct gcctggcctg 360
tgaccccgagg cttcctggag aagcaccaag tcctcccgagg ttccccc 407

<210> 22
<211> 267
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 22
cattgggtgca gcagggttag atggctatgt gctagagtat tgctttgaag gaagtaagta 60
caaccagtag ataaaatgaa tactgtcatc aatagggtgag atatgtccct cccctttctg 120
ttgtctctct ttcttgagaa cgcacacct tcctacgaaa ataagatcaa gccaaacgtc 180
atccttctga gatgtatata aactaagccc ttttttagta cttgggtgctt ataaattgat 240
atctcaaaag tatcttgggt aggctgc 267

<210> 23
<211> 333
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 23
catagtccag gagcagagtt agccagaatt gcctcctgct gcccagctt agagagctcc 60
catctcaatc attgagcctg aaggcttcaa gcccaaatg caacaagacc ccagcctac 120
atttctcagc tcccctggag ccagtgatcc tgtaacgctg ctggagggtca gtctgagcta 180
ccaagactgt ccctagacaa aggtgggagt cccccacact gccaaagacca aatccctcac 240
tcaacctgct gaggtgttgg atggggaaac aagaggcaaa actgaggcac ctgatgcatt 300
cagccctgct tgtgcagaag tgcattgact gcc 333

<210> 24

<211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 24
 cctgtggcgt aagcatccc a 21

 <210> 25
 <211> 25
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 25
 gcaagcactc ctttgtaaaa tgtcc 25

 <210> 26
 <211> 29
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 26
 tgcgttcacc attcatgtgg atgaagcag 29

 <210> 27
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

 <400> 27
 ctcctacttc aactaaccag tccacgag 28

 <210> 28
 <211> 25
 <212> DNA
 <213> Artificial Sequence

 <220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 28
gatgctttga agttatctct cttgg 25

<210> 29
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 29
atcagtgtgg cagatataat ggacc 25

<210> 30
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 30
gccccaaatg ccaggctgca ctgat 25

<210> 31
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 31
gccagaagac aagagtgtga gcctt 25

<210> 32
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 32
gcttcagggt ggtccaatta gagtt 25

<210> 33
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 33
tccaacaacg acacattcag gagtt 25

<210> 34
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 34
ggacacagag taagataccc actga 25

<210> 35
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 35
cctcggctctt tggctcttgc atatc 25

<210> 36
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 36
acaaggaaag tgtccctatc tctga 25

<210> 37
<211> 25
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 37

ctcgaggtct cccactgaag tgctc

25

<210> 38

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 38

cactgcacat taagatggag cccga

25

<210> 39

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 39

cctgtagaag ttctgctgcg tgtgg

25

<210> 40

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 40

cgagctgcct gacggccagg tcatc

25

<210> 41

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 41
gaagcatttg cggtaggacga tggag 25

<210> 42
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 42
tagaagacca aatgccccga gt 22

<210> 43
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 43
tgtatttctg tgggatcggt gg 22

<210> 44
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 44
ccccttttat agtaagagcc ccaga 25

<210> 45
<211> 369
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 45
ccataagaga aatgattggt aggtttgcat gaaattttaa aatttcctgt ggcgtaaggc 60
atcccataac gaagccaaaa ggtgagtgat agactgggag aaataactgc cagacgttgc 120

cagacaaaga tttcatatTT ctaatatgct agagtacctt taatttgata agaaaaagat 180
aagcaatcct gtaataaaat ggacatttta caaaggagtg cttgcaaag gccagtgaat 240
ttatgcaaag atgttcaggg aaataggaat gaaaacgaga ttccactttt tcatcatcca 300
tttgattggc aagaaatttt taaaagagta atacctagtg aatcactcat gtaggaaaat 360
gggttggtg 369

<210> 46
<211> 301
<212> DNA
<213> Artificial Sequence

<220>
<221> modified_base
<222> (212)
<223> n = A, C, G or T

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 46
gcccttgaag agtgaacca agaagcatct ctcaatcaat gaacctgaga cagcctgttc 60
acttctgacc atcattcttg tcctttagat ctcaagttca aattcatttc ttctagacat 120
tcattctctt ccattgttta tctggaacca tctacccttc caccagacca attatcctgg 180
caaattaatg taatagacca gtattaatta tntgggttgta tgtcttaaca acattctagg 240
tgctgtgcca aaaacaaatg aatagcaaca caaggtcttc ttggttacac tcttcaaggg 300
c 301

<210> 47
<211> 3061
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (15) .. (1172)

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 47
cggctctcct caac atg aga gct gca ccc ctc ctc ctg gcc agg gca gca 50
Met Arg Ala Ala Pro Leu Leu Leu Ala Arg Ala Ala
1 5 10

agc ctt agc ctt ggc ttc ttg ttt ctg ctt ttt ttc tgg cta gac cga	98
Ser Leu Ser Leu Gly Phe Leu Phe Leu Leu Phe Phe Trp Leu Asp Arg	
15 20 25	
agt gta cta gcc aag gag ttg aag ttt gtg act ttg gtg ttt cgg cat	146
Ser Val Leu Ala Lys Glu Leu Lys Phe Val Thr Leu Val Phe Arg His	
30 35 40	
gga gac cga agt ccc att gac acc ttt ccc act gac ccc ata aag gaa	194
Gly Asp Arg Ser Pro Ile Asp Thr Phe Pro Thr Asp Pro Ile Lys Glu	
45 50 55 60	
tcc tca tgg cca caa gga ttt ggc caa ctc acc cag ctg ggc atg gag	242
Ser Ser Trp Pro Gln Gly Phe Gly Gln Leu Thr Gln Leu Gly Met Glu	
65 70 75	
cag cat tat gaa ctt gga gag tat ata aga aag aga tat aga aaa ttc	290
Gln His Tyr Glu Leu Gly Glu Tyr Ile Arg Lys Arg Tyr Arg Lys Phe	
80 85 90	
ttg aat gag tcc tat aaa cat gaa cag gtt tat att cga agc aca gac	338
Leu Asn Glu Ser Tyr Lys His Glu Gln Val Tyr Ile Arg Ser Thr Asp	
95 100 105	
gtt gac cgg act ttg atg agt gct atg aca aac ctg gca gcc ctg ttt	386
Val Asp Arg Thr Leu Met Ser Ala Met Thr Asn Leu Ala Ala Leu Phe	
110 115 120	
ccc cca gaa ggt gtc agc atc tgg aat cct atc cta ctc tgg cag ccc	434
Pro Pro Glu Gly Val Ser Ile Trp Asn Pro Ile Leu Leu Trp Gln Pro	
125 130 135 140	
atc ccg gtg cac aca gtt cct ctt tct gaa gat cag ttg cta tac ctg	482
Ile Pro Val His Thr Val Pro Leu Ser Glu Asp Gln Leu Leu Tyr Leu	
145 150 155	
cct ttc agg aac tgc cct cgt ttt caa gaa ctt gag agt gag act ttg	530
Pro Phe Arg Asn Cys Pro Arg Phe Gln Glu Leu Glu Ser Glu Thr Leu	
160 165 170	
aaa tca gag gaa ttc cag aag agg ctg cac cct tat aag gat ttt ata	578
Lys Ser Glu Glu Phe Gln Lys Arg Leu His Pro Tyr Lys Asp Phe Ile	
175 180 185	
gct acc ttg gga aaa ctt tca gga tta cat ggc cag gac ctt ttt gga	626
Ala Thr Leu Gly Lys Leu Ser Gly Leu His Gly Gln Asp Leu Phe Gly	
190 195 200	
att tgg agt aaa gtc tac gac cct tta tat tgt gag agt gtt cac aat	674
Ile Trp Ser Lys Val Tyr Asp Pro Leu Tyr Cys Glu Ser Val His Asn	
205 210 215 220	
ttc act tta ccc tcc tgg gcc act gag gac acc atg act aag ttg aga	722
Phe Thr Leu Pro Ser Trp Ala Thr Glu Asp Thr Met Thr Lys Leu Arg	
225 230 235	

gaa ttg tca gaa ttg tcc ctc ctg tcc ctc tat gga att cac aag cag 770
 Glu Leu Ser Glu Leu Ser Leu Leu Ser Leu Tyr Gly Ile His Lys Gln
 240 245 250

aaa gag aaa tct agg ctc caa ggg ggt gtc ctg gtc aat gaa atc ctc 818
 Lys Glu Lys Ser Arg Leu Gln Gly Gly Val Leu Val Asn Glu Ile Leu
 255 260 265

aat cac atg aag aga gca act cag ata cca agc tac aaa aaa ctt atc 866
 Asn His Met Lys Arg Ala Thr Gln Ile Pro Ser Tyr Lys Lys Leu Ile
 270 275 280

atg tat tct gcg cat gac act act gtg agt ggc cta cag atg gcg cta 914
 Met Tyr Ser Ala His Asp Thr Thr Val Ser Gly Leu Gln Met Ala Leu
 285 290 295 300

gat gtt tac aac gga ctc ctt cct ccc tat gct tct tgc cac ttg acg 962
 Asp Val Tyr Asn Gly Leu Leu Pro Pro Tyr Ala Ser Cys His Leu Thr
 305 310 315

gaa ttg tac ttt gag aag ggg gag tac ttt gtg gag atg tac tat cgg 1010
 Glu Leu Tyr Phe Glu Lys Gly Glu Tyr Phe Val Glu Met Tyr Tyr Arg
 320 325 330

aat gag acg cag cac gag ccg tat ccc ctc atg cta cct ggc tgc agc 1058
 Asn Glu Thr Gln His Glu Pro Tyr Pro Leu Met Leu Pro Gly Cys Ser
 335 340 345

cct agc tgt cct ctg gag agg ttt gct gag ctg gtt ggc cct gtg atc 1106
 Pro Ser Cys Pro Leu Glu Arg Phe Ala Glu Leu Val Gly Pro Val Ile
 350 355 360

cct caa gac tgg tcc acg gag tgt atg acc aca aac agc cat caa ggt 1154
 Pro Gln Asp Trp Ser Thr Glu Cys Met Thr Thr Asn Ser His Gln Gly
 365 370 375 380

act gag gac agt aca gat tagtgtgcac agagatctct gtagaaagag 1202
 Thr Glu Asp Ser Thr Asp
 385

tagctgccct ttctcagggc agatgatgct ttgagaacat actttggcca ttacccccca 1262

gctttgagga aaatgggctt tggatgatta ttttatgttt tagggacccc caacctcagg 1322

caattcctac ctcttcacct gaccctgccc ccacttgcca taaaacttag ctaagttttg 1382

ttttgttttt cagcgttaat gtaaaggggc agcagtgccca aaatataatc agagataaag 1442

cttaggtcaa agttcataga gttcccatga actatatgac tggccacaca ggatcttttg 1502

tatttaagga ttctgagatt ttgcttgagc aggattagat aagtctgttc tttaaatttc 1562

tgaaatggaa cagatttcaa aaaaaattcc cacaatctag ggtgggaaca aggaaggaaa 1622

gatgtgaata ggctgatggg gaaaaaacca atttaccat cagttccagc cttctctcaa 1682

ggagaggcaa agaaaggaga tacagtggag acatctggaa agttttctcc actggaaaac 1742

tgctactatc tgtttttata tttctgttaa aatatatgag gctacagaac taaaaattaa 1802
 aacctctttg tgtcccttgg tcttggaaaca tttatgttcc ttttaaagaa acaaaaatca 1862
 aactttacag aaagatttga tgtatgtaat acatatagca gctcttgaag tatatatatc 1922
 atagcaaata agtcatctga tgagaacaag ctatttgggc acaacacatc aggaaagaga 1982
 gcaccacgtg atggagtttc tccagaagct ccagtataa gagatgttga ctctaaagtt 2042
 gatttaaggc caggcatggt ggtttacgcc tataatccca gcattttggg actccgaggt 2102
 gggcagatca cttgagctca ggagctcaag atcagcctgg gcaacatggt gaaaccttgt 2162
 ctctacataa aatacaaaaa cttagatggg catgggtgctg tgtgcctata gtccactact 2222
 tgtggggcta aggcaggagg atcacttgag ccccgagggt cgaggctaca gtgacccaag 2282
 agtgcactac tgtactccag ccagggaag agagcgagac cctgtctcaa taaataaata 2342
 aataaataaa taaataaata aataaaaaaca aagttgatta agaaaggaag tataggccag 2402
 gcacagtggc tcacacctgt aatccttgca ttttgaagg ctgaggcagg aggatcactt 2462
 taggcctggt gtgttcaaga ccagcctggt caacatagtg agacactgtc tctacaaaaa 2522
 aaaggaagga agggacacat atcaaaactga aaaaaatta gaaatgtaat tatgttatgt 2582
 tctaagtgcc tccaagttca aaacttattg gaatgttgag agtgtggtta cgaaatacgt 2642
 taggaggaca aaaggaatgt gtaagtcttt aatgccgata tcttcagaaa acctaagcaa 2702
 acttacaggt cctgctgaaa ctgcccactc tgcaagaaga aatcatgata tagctttcca 2762
 tgtggcagat ctacatgtct agagaacact gtgctctatt accattatgg ataaagatga 2822
 gatggtttct agagatgggt tctactggct gccagaatct agagcaaagc catccccct 2882
 cctggttggc cacagaatga ctgacaaaga catcgattga tatgcttctt tgtgttattt 2942
 ccctcccaag taaatgtttg tccttgggtc cattttctat gcttgtaact gtcttctagc 3002
 agtgagccaa atgtaaaata gtgaataaag tcattattag gaagttcaaa aaaaaaaaaa 3061

<210> 48

<211> 386

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 48

Met Arg Ala Ala Pro Leu Leu Leu Ala Arg Ala Ala Ser Leu Ser Leu

1	5	10	15
Gly Phe Leu Phe Leu Leu Phe Phe Trp Leu Asp Arg Ser Val Leu Ala	20	25	30
Lys Glu Leu Lys Phe Val Thr Leu Val Phe Arg His Gly Asp Arg Ser	35	40	45
Pro Ile Asp Thr Phe Pro Thr Asp Pro Ile Lys Glu Ser Ser Trp Pro	50	55	60
Gln Gly Phe Gly Gln Leu Thr Gln Leu Gly Met Glu Gln His Tyr Glu	65	70	75
Leu Gly Glu Tyr Ile Arg Lys Arg Tyr Arg Lys Phe Leu Asn Glu Ser	85	90	95
Tyr Lys His Glu Gln Val Tyr Ile Arg Ser Thr Asp Val Asp Arg Thr	100	105	110
Leu Met Ser Ala Met Thr Asn Leu Ala Ala Leu Phe Pro Pro Glu Gly	115	120	125
Val Ser Ile Trp Asn Pro Ile Leu Leu Trp Gln Pro Ile Pro Val His	130	135	140
Thr Val Pro Leu Ser Glu Asp Gln Leu Leu Tyr Leu Pro Phe Arg Asn	145	150	155
Cys Pro Arg Phe Gln Glu Leu Glu Ser Glu Thr Leu Lys Ser Glu Glu	165	170	175
Phe Gln Lys Arg Leu His Pro Tyr Lys Asp Phe Ile Ala Thr Leu Gly	180	185	190
Lys Leu Ser Gly Leu His Gly Gln Asp Leu Phe Gly Ile Trp Ser Lys	195	200	205
Val Tyr Asp Pro Leu Tyr Cys Glu Ser Val His Asn Phe Thr Leu Pro	210	215	220
Ser Trp Ala Thr Glu Asp Thr Met Thr Lys Leu Arg Glu Leu Ser Glu	225	230	235
Leu Ser Leu Leu Ser Leu Tyr Gly Ile His Lys Gln Lys Glu Lys Ser	245	250	255
Arg Leu Gln Gly Gly Val Leu Val Asn Glu Ile Leu Asn His Met Lys	260	265	270
Arg Ala Thr Gln Ile Pro Ser Tyr Lys Lys Leu Ile Met Tyr Ser Ala	275	280	285
His Asp Thr Thr Val Ser Gly Leu Gln Met Ala Leu Asp Val Tyr Asn	290	295	300
Gly Leu Leu Pro Pro Tyr Ala Ser Cys His Leu Thr Glu Leu Tyr Phe			

305		310		315		320									
Glu	Lys	Gly	Glu	Tyr	Phe	Val	Glu	Met	Tyr	Tyr	Arg	Asn	Glu	Thr	Gln
			325					330					335		
His	Glu	Pro	Tyr	Pro	Leu	Met	Leu	Pro	Gly	Cys	Ser	Pro	Ser	Cys	Pro
		340					345					350			
Leu	Glu	Arg	Phe	Ala	Glu	Leu	Val	Gly	Pro	Val	Ile	Pro	Gln	Asp	Trp
		355				360					365				
Ser	Thr	Glu	Cys	Met	Thr	Thr	Asn	Ser	His	Gln	Gly	Thr	Glu	Asp	Ser
	370					375					380				
Thr	Asp														
385															

<210> 49
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 49
 tcgctccaca ttcataccttt ct 22

<210> 50
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 50
 tgatccctgg gtgatataga gcata 25

<210> 51
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 51
 gcccacatc tgaacaagct aataa 25

<210> 52
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 52
tgcgcccttc atacaggcag agttg 25

<210> 53
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 53
cacgatgcca ttctgccatt tctgt 25

<210> 54
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 54
ggaagagatg gaatagaaac tgtaa 25

<210> 55
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 55
cttaactcgg gcatttggtc ttc 23

<210> 56
<211> 21
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 56

Arg Lys Lys Glu Lys Val Lys Arg Ser Gln Lys Ala Thr Glu Phe Ile
1 5 10 15

Asp Tyr Ser Ile Glu
20

<210> 57

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 57

cactggaacc aacaggcctg cctcaac

27

<210> 58

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 58

ccgagccaat tggtagcaggt ctgttctccc

30

<210> 59

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 59

cctcaagact ggtccacgga gtgtatga

28

<210> 60

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 60
gggtaatggc caaagtatgt tctcaaagca 30

<210> 61
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 61
aaacaaacgt ctttgggtaa a 21

<210> 62
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 62
ctggacaaag aggaatatga 20

<210> 63
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 63
gccctttata aatacgatta gtatggag 28

<210> 64
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 64
tgtagttagt gcagcaaaaag gaaga 25

<210> 65
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 65
gatgtaatta aagctgtaga tgaggg 26

<210> 66
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 66
gaatactaac aatctgctca aacttggg 28

<210> 67
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 67
gccaaatggg tagcattggt gctcgg 26

<210> 68
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 68
cagagtgggg caagataccc ttgag 25

<210> 69
<211> 21
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 69

aatggaattt cttatgccct c

21

<210> 70

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 70

caatgccaag cacccactga ttc

23

<210> 71

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 71

acacagacac acacatgcac acca

24

<210> 72

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 72

cctacctgtg cagaaatcaa

20

<210> 73

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 73
 agcagcatag cctctctgaa actc 24

<210> 74
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 74
 ccttctcatg tagcctgcaa cctgctc 27

<210> 75
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 75
 cattggtgca gcaggtttag atgg 24

<210> 76
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 76
 gagatatcaa ttataagca ccaag 25

<210> 77
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 77
 atctcaatca ttgagcctga agg 23

<210> 78
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 78
cagcaggttg agtgagggat ttgg 24

<210> 79
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 79
cgcctcaggc tggggcagca tt 22

<210> 80
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 80
acagtggaag agtctcattc gagat 25

<210> 81
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 81
cgagctgcct gacggccagg tcatc 25

<210> 82
<211> 25
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 82

gaagcatttg cgggtggacga tggag

25

<210> 83

<211> 2088

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (99) .. (503)

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 83

gaccttaa at atcgcaggt ggctaattga tgtataataa tttacaaaat tattcttcta 60

ttgctacaga gctacaattc aattttacagt aggccacc atg agg gcc ttc tta agg 116
Met Arg Ala Phe Leu Arg
1 5

aac cag aaa tat gag gat atg cac aat att att cac att tta cag atc 164
Asn Gln Lys Tyr Glu Asp Met His Asn Ile Ile His Ile Leu Gln Ile
10 15 20

aga aaa ttg agg cac aga tta agt aac ttc cca agg cta cca ggc att 212
Arg Lys Leu Arg His Arg Leu Ser Asn Phe Pro Arg Leu Pro Gly Ile
25 30 35

cta gct cca gaa act gtg ctc tta cca ttc tgc tac aag gta ttt cga 260
Leu Ala Pro Glu Thr Val Leu Leu Pro Phe Cys Tyr Lys Val Phe Arg
40 45 50

aaa aaa gaa aaa gta aaa aga agt caa aag gca aca gag ttc att gat 308
Lys Lys Glu Lys Val Lys Arg Ser Gln Lys Ala Thr Glu Phe Ile Asp
55 60 65 70

tat tcc ata gaa cag tca cac cat gca att ctc aca ccc ttg cag aca 356
Tyr Ser Ile Glu Gln Ser His His Ala Ile Leu Thr Pro Leu Gln Thr
75 80 85

cac ttg acc atg aaa ggt tcc tca atg aaa tgt tcc tca tta tct tca 404
His Leu Thr Met Lys Gly Ser Ser Met Lys Cys Ser Ser Leu Ser Ser
90 95 100

gaa gcc ata tta ttc aca ttg act ttg cag tta act cag acc cta ggt 452
Glu Ala Ile Leu Phe Thr Leu Thr Leu Gln Leu Thr Gln Thr Leu Gly
105 110 115

ctg gaa tgc tgt ctt ctc tac tta tcc aaa act ata cat cca cag atc 500

Leu Glu Cys Cys Leu Leu Tyr Leu Ser Lys Thr Ile His Pro Gln Ile
120 125 130

ata taaactctca gccctgctgc aaagcctttc cagaaaaata aaaatgggtg 553
Ile
135
aaaaggcaat tctgctacca atgactgttt aagcccagcc aagtaactga accattccaa 613
cttcaattta cttatgaaaa gaatttgatg atgtaggagg ttatttcaat tctaaaatac 673
aaacccatgt tgatctttct caatcttgaa ctcatagatt attatctatt atctcaattt 733
agtttggtat ttatcctagt gggccattaa aaactaccac atgtgtttct gtctctccat 793
tagtcaataa ctaaactaac gagcaattag taagccatgt gccagatgct ccgctaggca 853
ccagagggat aaaaacaata cttatagtat accactaatt ttcgcttagt aactagtga 913
atgttcaagt catgcctgag tcaagagttg aggagacatt acaatgtgta atggaaacca 973
aggaaagtga aactttggat aagtggggac tagtgtattt atatatttaa ttgatttctg 1033
actctatcat tggcctccaa acacagattg tgtttttctt tggttttgtt ttcttacta 1093
tggtgatctt tgtgcccagc acagtgcctg acacatagaa aacaatcaat atttgctgaa 1153
taaatgatta aaaaatcaga gaactttccc attctgtttg gatctataga acatccagag 1213
taagtgatga gggcctctgc atttatatgc gcttaaatta agattatgtg agaaaagtgt 1273
aaagacactt agtagagtga ttttgaaata tagtaaacac ttggaaatgg tggtgcttta 1333
aaaagatatt aatagataat atgaaaatct ccatctcaaa aataatgcat aaactattta 1393
aaggaaaatc acatctccag gctttcaatg tttgttcatt actttttcat atatttttac 1453
catctgctga aggcagtc atcaaagggg aaagaaagat gggaggaaaa ctgagtaaga 1513
attatattag tctgtttgca aagtagaaaa agattctcat cactcaacct tatgagcagg 1573
aagaggggaag gctgtttgag aaccatttac ttagcagaac cacatatttt agacacttcc 1633
ctgcattaac tgcacaaaca atatgtttgc aaacttgtrr gatcaacctc caacaacgac 1693
acattcagga gttaaataatt tttcatcaaa cattggattt ttccttaacg ctagagattg 1753
ctacaaatct tctgaagggt ctcaatggct tcaggctaag aagagatttc tccctgttat 1813
aagcagcaag acaaattagc catttcactc tcaaacttca ctaatgatca cattctttcc 1873
aaaaggaact ctagaagacc aaatgccccg agttaagaac atcaaaaacta accatctgaa 1933
gaaacttccc aagtgtgaaga ctctgcctgc acgacaacac ataaaaaaag agagaagaat 1993
caaatagaca caataaaaaa tgataaaggg gatatcacca ccgatccac agaaatacaa 2053

actaccatca gagaatacta caaacacctc tacgc

2088

<210> 84

<211> 135

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 84

Met Arg Ala Phe Leu Arg Asn Gln Lys Tyr Glu Asp Met His Asn Ile
1 5 10 15

Ile His Ile Leu Gln Ile Arg Lys Leu Arg His Arg Leu Ser Asn Phe
20 25 30

Pro Arg Leu Pro Gly Ile Leu Ala Pro Glu Thr Val Leu Leu Pro Phe
35 40 45

Cys Tyr Lys Val Phe Arg Lys Lys Glu Lys Val Lys Arg Ser Gln Lys
50 55 60

Ala Thr Glu Phe Ile Asp Tyr Ser Ile Glu Gln Ser His His Ala Ile
65 70 75 80

Leu Thr Pro Leu Gln Thr His Leu Thr Met Lys Gly Ser Ser Met Lys
85 90 95

Cys Ser Ser Leu Ser Ser Glu Ala Ile Leu Phe Thr Leu Thr Leu Gln
100 105 110

Leu Thr Gln Thr Leu Gly Leu Glu Cys Cys Leu Leu Tyr Leu Ser Lys
115 120 125

Thr Ile His Pro Gln Ile Ile
130 135

<210> 85

<211> 2506

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (99)..(503)

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 85

gaccttaa atatcgaggt ggctaattga tgtataataa ttacaaaat tattcttcta 60

tgggatcttc tgtgcccagc acagtgcctg acacatagaa aacaatcaat atttgctgaa 1153
 taaatgatta aaaaatcaga gaactttccc attctgtttg gatctataga acatccagag 1213
 taagtgatga gggcctctgc atttatatgc gcttaaatta agattatgtg agaaaagttt 1273
 aaagacactt agtagagtga ttttgaaaata tagtaaacac ttggaaatgg tggtgcttta 1333
 aaaagatatt aatagataat atgaaaatct ccatctcaaa aataatgcat aaactattta 1393
 aaggaaaatc acatctccag gctttcaatg tttgttcatt actttttcat atatttttac 1453
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<211> 135

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 86

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1 5 10 15

Ile His Ile Leu Gln Ile Arg Lys Leu Arg His Arg Leu Ser Asn Phe
20 25 30

Pro Arg Leu Pro Gly Ile Leu Ala Pro Glu Thr Val Leu Leu Pro Phe
35 40 45

Cys Tyr Lys Val Phe Arg Lys Lys Glu Lys Val Lys Arg Ser Gln Lys
50 55 60

Ala Thr Glu Phe Ile Asp Tyr Ser Ile Glu Gln Ser His His Ala Ile
65 70 75 80

Leu Thr Pro Leu Gln Thr His Leu Thr Met Lys Gly Ser Ser Met Lys
85 90 95

Cys Ser Ser Leu Ser Ser Glu Ala Ile Leu Phe Thr Leu Thr Leu Gln
100 105 110

Leu Thr Gln Thr Leu Gly Leu Glu Cys Cys Leu Leu Tyr Leu Ser Lys
115 120 125

Thr Ile His Pro Gln Ile Ile
130 135

<210> 87

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

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22

<210> 88

<211> 6

<212> PRT

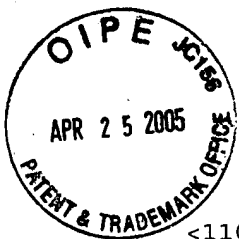
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<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 88

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SEQUENCE LISTING

<110> AN, GANG
O'HARA, S. MARK
RALPH, DAVID
VELTRI, ROBERT

<120> BIOMARKERS AND TARGETS FOR DIAGNOSIS, PROGNOSIS AND
MANAGEMENT OF PROSTATE, BREAST AND BLADDER CANCER

<130> UROC:018USD2

<140> 09.974,546

<141> 2001-10-19

<150> 09/662,270

<151> 2000-09-14

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<210> 2

<211> 614

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 2

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ggacaggggg cccttccctg cctggcagca gaggcagaga gagagagaag agagagagac 180
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<210> 3

<211> 757

<212> DNA

<213> Artificial Sequence

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Primer

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cctgttataa gcagcaagac aaattagcca tttcactctc aaacttcact aatgatcaca 180
ttctttccaa aaggaactct agaagaccaa atgccccgag ttaagaacat caaaactaac 240
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757

<210> 4

<211> 673

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

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cataactttg cgacaattca gtagaaatag gcatacaaac ctgggcctga tgacactcac 180
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<210> 5

<211> 358

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

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<210> 6

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 6

cacagatgta gcttcctcac tgg 23

<210> 7

<211> 610

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 7

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gataccatca tcccagctgt tcctcctccc actgacctgc gattcaccaa cattgggtcca 120
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<210> 8

<211> 1649

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

Primer

<400> 8

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1649

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<211> 175

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

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ttctggggct cttactataa aaggggacca actctccctt tgtcatatct tgtttctgat 120

gacaaaaaat aacacattgt taaaattgta aaattaaaac atgaaatata aatta 175

<210> 10

<211> 166

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 10

gtttcgtcc acattcatcc tttcttactg ggactgatg ttgagagcat caggcagggt 60

ataatgttat gttgcagtaa caaacaccct caatatctca gtggcttaaa atgacaacga 120

tctttttttt gtttgtttgt ttatgctcta tatcaccag ggatca 166

<210> 11

<211> 107

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 11

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attgggaaat tcaaaccatg cacaactctg cctgtatgaa gggcgca 107

<210> 12

<211> 183

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

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acaggttggc ccaggcactc taaggcccag gctggcacag gttggcccag gcacttcaag 120
cctaagtcca ttacagttt ctattccatc tcttcctaaa gaagaggaga ggggctaagg 180
ttg 183

<210> 13

<211> 92

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

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<210> 14

<211> 182

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

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gccttgatc agctgatgct ggactgctgg cagaaagaca ggaacaacag acccaagttt 120
gagcagattg ttagtattct ggacaagctt atccggaatc ccggcagcct gaaggatcat 180
ca 182

<210> 15

<211> 174

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 15
gccaaatggg tagcattggt gctcggcctt ctagtctgcc agtaggaaag tccaaccatt 60
aggtcgggga agaaggggtct ggatttggtt gacaatgggt ggatggggga tagaagcaga 120
gagagagagg gagggcagct caaggggtatc ttgccccact ctgtttatgc tgat 174

<210> 16
<211> 132
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 16
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catgtatgtc cataatggga gacgttttct ttggactgat gcttgaatca gtgggtgctt 120
ggcattgctg at 132

<210> 17
<211> 135
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 17
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tctcaaaatc ttaaaagcca tatgtgcatt gatttctgca caggtaggca atttgtgatt 120
ttatttttcc ttatg 135

<210> 18
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 18
cttcatggca ggactcgggt tggg 24

<210> 19
<211> 471

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 19
gccccaaatg ccaggctgca ctgatctcat gtctgtgtca ctggaaccaa caggcctgcc 60
tcaaccactg tccacctgca catctgagag gctggcaggt caccagggct agccgtgcac 120
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<210> 20
<211> 209
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

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gacagatttc taaattaacc tatggtccac aaatcaagtt ctatcactat ttctgtccac 120
caaaatcagt gatgaagcct ctcccacact aaatgaagag tggcgaggga cagaattcca 180
cttgtcttcc ttttgctgca ctaactaca 209

<210> 21
<211> 407
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 21
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atttacaac ctacctcata gagcagggtg caggctacat gagaagggtgc aagttcaatg 120

ccaagcaggg tcctagtatt taataaaagc tcaataaata ttcattttct tctttccttc 180
tcttacttga agtataacat ttgataatga attttctcat tgcaacaata acacccttc 240
cactgagggg tttgtatccc tgcttaagaa gctattagta ttctacagca ggactcacc 300
cacacaatct tggcaggaat acatccctct acctctctgg tcaataacct gcctggcctg 360
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<210> 22

<211> 267

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 22

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caaccagtag ataaaatgaa tactgtcatc aatagggtgag atatgtccct cccctttctg 120
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atccttctga gatgtatata aactaagccc ttttttagta cttggtgctt ataaattgat 240
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<210> 23

<211> 333

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

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catctcaatc attgagcctg aaggcttcaa gccaaaatg caacaagacc ccagcctac 120
atttctcagc tcccctggag ccagtgatcc tgtaacgctg ctggagggtca gtctgagcta 180
ccaagactgt ccctagacaa aggtgggagt cccccacact gccaaagacca aatccctcac 240
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cagccctgct tgtgcagaag tgcattgact gcc 333

<210> 24

<211> 21
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 24
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21

<210> 25
<211> 25
<212> DNA
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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 25
gcaagcactc ctttgtaaaa tgtcc

25

<210> 26
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Primer

<400> 26
tgcgttcacc attcatgtgg atgaagcag

29

<210> 27
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<212> DNA
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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 27
ctcctacttc aactaaccag tccacgag

28

<210> 28
<211> 25
<212> DNA
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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 28
gatgctttga agttatctct cttgg 25

<210> 29
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Primer

<400> 29
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<210> 30
<211> 25
<212> DNA
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<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 30
gccccaaatg ccaggctgca ctgat 25

<210> 31
<211> 25
<212> DNA
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<220>
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Primer

<400> 31
gccagaagac aagagtgtga gcctt 25

<210> 32
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
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Primer

<400> 32
gcttcagggt ggtccaatta gagtt 25

<210> 33
<211> 25
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 33
tccaacaacg acacattcag gagtt 25

<210> 34
<211> 25
<212> DNA
<213> Artificial Sequence

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Primer

<400> 34
ggacacagag taagataccc actga 25

<210> 35
<211> 25
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 35
cctcggctctt tggctctttgc atata 25

<210> 36
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 36
acaaggaaag tgtccctatc tctga 25

<210> 37
<211> 25
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 37

ctcgaggtct cccactgaag tgctc

25

<210> 38

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 38

cactgcacat taagatggag cccga

25

<210> 39

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 39

cctgtagaag ttctgctgcg tgtgg

25

<210> 40

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 40

cgagctgcct gacggccagg tcatc

25

<210> 41

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 41
gaagcatttg cggtaggacga tggag 25

<210> 42
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 42
tagaagacca aatgccccga gt 22

<210> 43
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 43
tgtatttctg tgggatcggt gg 22

<210> 44
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 44
ccccttttat agtaagagcc ccaga 25

<210> 45
<211> 369
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 45
ccataagaga aatgattggg aggtttgcat gaaattttaa aatttcctgt ggcgtaaggc 60
atcccataac gaagccaaaa ggtgagtgat agactgggag aaataactgc cagacgttgc 120

cagacaaaga tttcatatTT ctaatatgct agagtacctt taatttgata agaaaaagat 180
aagcaatcct gtaataaaat ggacatttta caaaggagtg cttgcaaagtg gccagtgaat 240
ttatgcaaag atgttcaggg aaataggaat gaaaacgaga ttccactttt tcatcatcca 300
tttgattggc aagaaatttt taaaagagta atacctagtg aatcactcat gtaggaaaat 360
gggttggtg 369

<210> 46
<211> 301
<212> DNA
<213> Artificial Sequence

<220>
<221> modified_base
<222> (212)
<223> n = A, C, G or T

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 46
gcccttgaag agtgaacca agaagcatct ctcaatcaat gaacctgaga cagcctgttc 60
acttctgacc atcattcttg tcctttagat ctcaagttta aattcatttc ttctagacat 120
tcattctcttc ccatgtttta tctggaacca tctacccttc caccagacca attatcctgg 180
caaattaatg taatagacca gtattaatta tntgggttgta tgtcttaaca acattctagg 240
tgctgtgcca aaaacaaatg aatagcaaca caaggtcttc ttggttacac tcttcaaggg 300
c 301

<210> 47
<211> 3061
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (15)..(1172)

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 47
cggctctcct caac atg aga gct gca ccc ctc ctc ctg gcc agg gca gca 50
Met Arg Ala Ala Pro Leu Leu Leu Ala Arg Ala Ala
1 5 10

agc ctt agc ctt ggc ttc ttg ttt ctg ctt ttt ttc tgg cta gac cga	98
Ser Leu Ser Leu Gly Phe Leu Phe Leu Leu Phe Phe Trp Leu Asp Arg	
15 20 25	
agt gta cta gcc aag gag ttg aag ttt gtg act ttg gtg ttt cgg cat	146
Ser Val Leu Ala Lys Glu Leu Lys Phe Val Thr Leu Val Phe Arg His	
30 35 40	
gga gac cga agt ccc att gac acc ttt ccc act gac ccc ata aag gaa	194
Gly Asp Arg Ser Pro Ile Asp Thr Phe Pro Thr Asp Pro Ile Lys Glu	
45 50 55 60	
tcc tca tgg cca caa gga ttt ggc caa ctc acc cag ctg ggc atg gag	242
Ser Ser Trp Pro Gln Gly Phe Gly Gln Leu Thr Gln Leu Gly Met Glu	
65 70 75	
cag cat tat gaa ctt gga gag tat ata aga aag aga tat aga aaa ttc	290
Gln His Tyr Glu Leu Gly Glu Tyr Ile Arg Lys Arg Tyr Arg Lys Phe	
80 85 90	
ttg aat gag tcc tat aaa cat gaa cag gtt tat att cga agc aca gac	338
Leu Asn Glu Ser Tyr Lys His Glu Gln Val Tyr Ile Arg Ser Thr Asp	
95 100 105	
gtt gac cgg act ttg atg agt gct atg aca aac ctg gca gcc ctg ttt	386
Val Asp Arg Thr Leu Met Ser Ala Met Thr Asn Leu Ala Ala Leu Phe	
110 115 120	
ccc cca gaa ggt gtc agc atc tgg aat cct atc cta ctc tgg cag ccc	434
Pro Pro Glu Gly Val Ser Ile Trp Asn Pro Ile Leu Leu Trp Gln Pro	
125 130 135 140	
atc ccg gtg cac aca gtt cct ctt tct gaa gat cag ttg cta tac ctg	482
Ile Pro Val His Thr Val Pro Leu Ser Glu Asp Gln Leu Leu Tyr Leu	
145 150 155	
cct ttc agg aac tgc cct cgt ttt caa gaa ctt gag agt gag act ttg	530
Pro Phe Arg Asn Cys Pro Arg Phe Gln Glu Leu Glu Ser Glu Thr Leu	
160 165 170	
aaa tca gag gaa ttc cag aag agg ctg cac cct tat aag gat ttt ata	578
Lys Ser Glu Glu Phe Gln Lys Arg Leu His Pro Tyr Lys Asp Phe Ile	
175 180 185	
gct acc ttg gga aaa ctt tca gga tta cat ggc cag gac ctt ttt gga	626
Ala Thr Leu Gly Lys Leu Ser Gly Leu His Gly Gln Asp Leu Phe Gly	
190 195 200	
att tgg agt aaa gtc tac gac cct tta tat tgt gag agt gtt cac aat	674
Ile Trp Ser Lys Val Tyr Asp Pro Leu Tyr Cys Glu Ser Val His Asn	
205 210 215 220	
ttc act tta ccc tcc tgg gcc act gag gac acc atg act aag ttg aga	722
Phe Thr Leu Pro Ser Trp Ala Thr Glu Asp Thr Met Thr Lys Leu Arg	
225 230 235	

gaa ttg tca gaa ttg tcc ctc ctg tcc ctc tat gga att cac aag cag	770
Glu Leu Ser Glu Leu Ser Leu Leu Ser Leu Tyr Gly Ile His Lys Gln	
240 245 250	
aaa gag aaa tct agg ctc caa ggg ggt gtc ctg gtc aat gaa atc ctc	818
Lys Glu Lys Ser Arg Leu Gln Gly Gly Val Leu Val Asn Glu Ile Leu	
255 260 265	
aat cac atg aag aga gca act cag ata cca agc tac aaa aaa ctt atc	866
Asn His Met Lys Arg Ala Thr Gln Ile Pro Ser Tyr Lys Lys Leu Ile	
270 275 280	
atg tat tct gcg cat gac act act gtg agt ggc cta cag atg gcg cta	914
Met Tyr Ser Ala His Asp Thr Thr Val Ser Gly Leu Gln Met Ala Leu	
285 290 295 300	
gat gtt tac aac gga ctc ctt cct ccc tat gct tct tgc cac ttg acg	962
Asp Val Tyr Asn Gly Leu Leu Pro Pro Tyr Ala Ser Cys His Leu Thr	
305 310 315	
gaa ttg tac ttt gag aag ggg gag tac ttt gtg gag atg tac tat cgg	1010
Glu Leu Tyr Phe Glu Lys Gly Glu Tyr Phe Val Glu Met Tyr Tyr Arg	
320 325 330	
aat gag acg cag cac gag ccg tat ccc ctc atg cta cct ggc tgc agc	1058
Asn Glu Thr Gln His Glu Pro Tyr Pro Leu Met Leu Pro Gly Cys Ser	
335 340 345	
cct agc tgt cct ctg gag agg ttt gct gag ctg gtt ggc cct gtg atc	1106
Pro Ser Cys Pro Leu Glu Arg Phe Ala Glu Leu Val Gly Pro Val Ile	
350 355 360	
cct caa gac tgg tcc acg gag tgt atg acc aca aac agc cat caa ggt	1154
Pro Gln Asp Trp Ser Thr Glu Cys Met Thr Thr Asn Ser His Gln Gly	
365 370 375 380	
act gag gac agt aca gat tagtgtgcac agagatctct gtagaaagag	1202
Thr Glu Asp Ser Thr Asp	
385	
tagctgccct ttctcagggc agatgatgct ttgagaacat actttggcca ttacccccca	1262
gctttgagga aaatgggctt tggatgatta ttttatgttt tagggacccc caacctcagg	1322
caattcctac ctcttcacct gaccctgccc ccacttgcca taaaacttag ctaagttttg	1382
ttttgttttt cagcgttaat gtaaaggggc agcagtgcca aaatataatc agagataaag	1442
cttaggtcaa agttcataga gttcccatga actatatgac tggccacaca ggatcttttg	1502
tatttaagga ttctgagatt ttgcttgagc aggattagat aagtctgttc tttaaatttc	1562
tgaaatggaa cagatttcaa aaaaaattcc cacaatctag ggtgggaaca aggaaggaaa	1622
gatgtgaata ggctgatggg gaaaaaacca atttaccat cagttccagc cttctctcaa	1682
ggagaggcaa agaaaggaga tacagtggag acatctggaa agttttctcc actggaaaac	1742

tgctactatc tgtttttata tttctgttaa aatatatgag gctacagaac taaaaattaa 1802
 aacctctttg tgtcccttgg tcctggaaca tttatgttcc ttttaaagaa acaaaaatca 1862
 aactttacag aaagatttga tgtatgtaat acatatagca gctcttgaag tatatatatc 1922
 atagcaaata agtcatctga tgagaacaag ctatttgggc acaacacatc aggaaagaga 1982
 gcaccacgtg atggagtttc tccagaagct ccagtataa gagatgttga ctctaaagtt 2042
 gatttaaggc caggcatggt ggtttacgcc tataatcca gcattttggg actccgaggt 2102
 gggcagatca cttgagctca ggagctcaag atcagcctgg gcaacatggt gaaaccttgt 2162
 ctctacataa aatacaaaaa cttagatggg catggtgctg tgtgcctata gtccactact 2222
 tgtggggcta aggcaggagg atcacttgag ccccgaggt cgaggctaca gtgaccaag 2282
 agtgcactac tgtactccag ccagggaag agagcgagac cctgtctcaa taaataaata 2342
 aataaataaa taaataaata aataaaaaaca aagttgatta agaaaggaag tataggccag 2402
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 taggcctggt gtgttcaaga ccagcctggt caacatagtg agacactgtc tctacaaaaa 2522
 aaaggaagga agggacacat atcaaactga acaaaaatta gaaatgtaat tatgttatgt 2582
 tctaagtgcc tccaagttca aaacttattg gaatgttgag agtgtggtta cgaaatacgt 2642
 taggaggaca aaaggaatgt gtaagtcttt aatgccgata tcttcagaaa acctaagcaa 2702
 acttacaggt cctgctgaaa ctgcccactc tgcaagaaga aatcatgata tagctttcca 2762
 tgtggcagat ctacatgtct agagaacact gtgctctatt accattatgg ataaagatga 2822
 gatggtttct agagatgggt tctactggct gccagaatct agagcaaagc catccccct 2882
 cctggttggt cacagaatga ctgacaaaga catcgattga tatgcttctt tgtgttatTT 2942
 ccctcccaag taaatgtttg tccttgggtc cattttctat gcttgtaact gtcttctagc 3002
 agtgagccaa atgtaaaata gtgaataaag tcattattag gaagttcaaa aaaaaaaaaa 3061

<210> 48

<211> 386

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 48

Met Arg Ala Ala Pro Leu Leu Leu Ala Arg Ala Ala Ser Leu Ser Leu

1	5	10	15
Gly Phe Leu Phe Leu Leu Phe Phe Trp Leu Asp Arg Ser Val Leu Ala	20	25	30
Lys Glu Leu Lys Phe Val Thr Leu Val Phe Arg His Gly Asp Arg Ser	35	40	45
Pro Ile Asp Thr Phe Pro Thr Asp Pro Ile Lys Glu Ser Ser Trp Pro	50	55	60
Gln Gly Phe Gly Gln Leu Thr Gln Leu Gly Met Glu Gln His Tyr Glu	65	70	80
Leu Gly Glu Tyr Ile Arg Lys Arg Tyr Arg Lys Phe Leu Asn Glu Ser	85	90	95
Tyr Lys His Glu Gln Val Tyr Ile Arg Ser Thr Asp Val Asp Arg Thr	100	105	110
Leu Met Ser Ala Met Thr Asn Leu Ala Ala Leu Phe Pro Pro Glu Gly	115	120	125
Val Ser Ile Trp Asn Pro Ile Leu Leu Trp Gln Pro Ile Pro Val His	130	135	140
Thr Val Pro Leu Ser Glu Asp Gln Leu Leu Tyr Leu Pro Phe Arg Asn	145	150	160
Cys Pro Arg Phe Gln Glu Leu Glu Ser Glu Thr Leu Lys Ser Glu Glu	165	170	175
Phe Gln Lys Arg Leu His Pro Tyr Lys Asp Phe Ile Ala Thr Leu Gly	180	185	190
Lys Leu Ser Gly Leu His Gly Gln Asp Leu Phe Gly Ile Trp Ser Lys	195	200	205
Val Tyr Asp Pro Leu Tyr Cys Glu Ser Val His Asn Phe Thr Leu Pro	210	215	220
Ser Trp Ala Thr Glu Asp Thr Met Thr Lys Leu Arg Glu Leu Ser Glu	225	230	240
Leu Ser Leu Leu Ser Leu Tyr Gly Ile His Lys Gln Lys Glu Lys Ser	245	250	255
Arg Leu Gln Gly Gly Val Leu Val Asn Glu Ile Leu Asn His Met Lys	260	265	270
Arg Ala Thr Gln Ile Pro Ser Tyr Lys Lys Leu Ile Met Tyr Ser Ala	275	280	285
His Asp Thr Thr Val Ser Gly Leu Gln Met Ala Leu Asp Val Tyr Asn	290	295	300
Gly Leu Leu Pro Pro Tyr Ala Ser Cys His Leu Thr Glu Leu Tyr Phe			

305		310		315		320
Glu Lys Gly Glu Tyr Phe Val Glu Met Tyr Tyr Arg Asn Glu Thr Gln						
		325		330		335
His Glu Pro Tyr Pro Leu Met Leu Pro Gly Cys Ser Pro Ser Cys Pro						
		340		345		350
Leu Glu Arg Phe Ala Glu Leu Val Gly Pro Val Ile Pro Gln Asp Trp						
		355		360		365
Ser Thr Glu Cys Met Thr Thr Asn Ser His Gln Gly Thr Glu Asp Ser						
		370		375		380
Thr Asp						
385						

<210> 49
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 49
 tcgctccaca ttcataccttt ct 22

<210> 50
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 50
 tgatccctgg gtgatataga gcata 25

<210> 51
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 51
 gccccacatc tgaacaagct aataa 25

<210> 52
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 52
tgcgcccttc atacaggcag agttg 25

<210> 53
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 53
cacgatgcca ttctgccatt tctgt 25

<210> 54
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 54
ggaagagatg gaatagaaac tgtaa 25

<210> 55
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 55
cttaactcgg gcatttggtc ttc 23

<210> 56
<211> 21
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 56

Arg Lys Lys Glu Lys Val Lys Arg Ser Gln Lys Ala Thr Glu Phe Ile
1 5 10 15

Asp Tyr Ser Ile Glu
20

<210> 57

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Primer

<400> 57

cactggaacc aacaggcctg cctcaac 27

<210> 58

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Primer

<400> 58

ccgagccaat tggtagcagg ctgttctccc 30

<210> 59

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Primer

<400> 59

cctcaagact ggtccacgga gtgtatga 28

<210> 60

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 60
gggtaatggc caaagtatgt tctcaaagca 30

<210> 61
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 61
aaacaaacgt ctttgggtaa a 21

<210> 62
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 62
ctggacaaaag aggaatatga 20

<210> 63
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 63
gccctttata aatacgatta gtatggag 28

<210> 64
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 64
tgtagttagt gcagcaaaaag gaaga 25

<210> 65
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 65
gatgtaatta aagctgtaga tgaggg 26

<210> 66
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 66
gaataactaac aatctgctca aacttggg 28

<210> 67
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 67
gccaaatggg tagcattggt gctcgg 26

<210> 68
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 68
cagagtgggg caagataccc ttgag 25

<210> 69
<211> 21
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 69

aatggaattt cttatgccct c

21

<210> 70

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 70

caatgccaag cacccactga ttc

23

<210> 71

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 71

acacagacac acacatgcac acca

24

<210> 72

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 72

cctacctgtg cagaaatcaa

20

<210> 73

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 73
agcagcatag cctctctgaa actc 24

<210> 74
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 74
ccttctcatg tagcctgcaa cctgctc 27

<210> 75
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 75
cattggtgca gcaggtttag atgg 24

<210> 76
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 76
gagatatcaa tttataagca ccaag 25

<210> 77
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 77
atctcaatca ttgagcctga agg 23

<210> 78
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 78
cagcaggttg agtgagggat ttgg 24

<210> 79
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 79
cgcttcaggc tggggcagca tt 22

<210> 80
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 80
acagtgaag agtctcattc gagat 25

<210> 81
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 81
cgagctgcct gacggccagg tcatc 25

<210> 82
<211> 25
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 82

gaagcatttg cgggtggacga tggag

25

<210> 83

<211> 2088

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (99)..(503)

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 83

gaccttaa at atcgcaggt ggctaattga tgtataataa tttacaaaat tattcttcta 60

ttgctacaga gctacaattc aattttacagt aggccacc atg agg gcc ttc tta agg 116

Met Arg Ala Phe Leu Arg

1

5

aac cag aaa tat gag gat atg cac aat att att cac att tta cag atc 164

Asn Gln Lys Tyr Glu Asp Met His Asn Ile Ile His Ile Leu Gln Ile

10

15

20

aga aaa ttg agg cac aga tta agt aac ttc cca agg cta cca ggc att 212

Arg Lys Leu Arg His Arg Leu Ser Asn Phe Pro Arg Leu Pro Gly Ile

25

30

35

cta gct cca gaa act gtg ctc tta cca ttc tgc tac aag gta ttt cga 260

Leu Ala Pro Glu Thr Val Leu Leu Pro Phe Cys Tyr Lys Val Phe Arg

40

45

50

aaa aaa gaa aaa gta aaa aga agt caa aag gca aca gag ttc att gat 308

Lys Lys Glu Lys Val Lys Arg Ser Gln Lys Ala Thr Glu Phe Ile Asp

55

60

65

70

tat tcc ata gaa cag tca cac cat gca att ctc aca ccc ttg cag aca 356

Tyr Ser Ile Glu Gln Ser His His Ala Ile Leu Thr Pro Leu Gln Thr

75

80

85

cac ttg acc atg aaa ggt tcc tca atg aaa tgt tcc tca tta tct tca 404

His Leu Thr Met Lys Gly Ser Ser Met Lys Cys Ser Ser Leu Ser Ser

90

95

100

gaa gcc ata tta ttc aca ttg act ttg cag tta act cag acc cta ggt 452

Glu Ala Ile Leu Phe Thr Leu Thr Leu Gln Leu Thr Gln Thr Leu Gly

105

110

115

ctg gaa tgc tgt ctt ctc tac tta tcc aaa act ata cat cca cag atc 500

Leu Glu Cys Cys Leu Leu Tyr Leu Ser Lys Thr Ile His Pro Gln Ile
120 125 130

ata taaactctca gccctgctgc aaagcctttc cagaaaaata aaaatgggtg 553
Ile
135

aaaaggcaat tctgctacca atgactgttt aagcccagcc aagtaactga accattccaa 613
cttcaattta cttatgaaaa gaatttgatg atgtaggagg ttatttcaat tctaaaatac 673
aaacccatgt tgatctttct caatcttgaa ctcatagatt attatctatt atctcaattt 733
agtttggtat ttatcctagt gggccattaa aaactaccac atgtgtttct gtctctccat 793
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atgttcaagt catgcctgag tcaagagttg aggagacatt acaatgtgta atggaaacca 973
aggaaagtga aactttggat aagtggggac tagtgtattt atatatttaa ttgatttctg 1033
actctatcat tggcctccaa acacagattg tgtttttctt tggttttgtt ttcttcacta 1093
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aaaaggaact ctagaagacc aaatgccccg agttaagaac atcaaaaacta accatctgaa 1933
gaaacttccc aagtgtgaaga ctctgcctgc acgacaacac ataaaaaaag agagaagaat 1993
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2088

<210> 84

<211> 135

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 84

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Ile His Ile Leu Gln Ile Arg Lys Leu Arg His Arg Leu Ser Asn Phe
20 25 30

Pro Arg Leu Pro Gly Ile Leu Ala Pro Glu Thr Val Leu Leu Pro Phe
35 40 45

Cys Tyr Lys Val Phe Arg Lys Lys Glu Lys Val Lys Arg Ser Gln Lys
50 55 60

Ala Thr Glu Phe Ile Asp Tyr Ser Ile Glu Gln Ser His His Ala Ile
65 70 75 80

Leu Thr Pro Leu Gln Thr His Leu Thr Met Lys Gly Ser Ser Met Lys
85 90 95

Cys Ser Ser Leu Ser Ser Glu Ala Ile Leu Phe Thr Leu Thr Leu Gln
100 105 110

Leu Thr Gln Thr Leu Gly Leu Glu Cys Cys Leu Leu Tyr Leu Ser Lys
115 120 125

Thr Ile His Pro Gln Ile Ile
130 135

<210> 85

<211> 2506

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (99)..(503)

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 85

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Met Arg Ala Phe Leu Arg	
1 5	
aac cag aaa tat gag gat atg cac aat att att cac att tta cag atc	164
Asn Gln Lys Tyr Glu Asp Met His Asn Ile Ile His Ile Leu Gln Ile	
10 15 20	
aga aaa ttg agg cac aga tta agt aac ttc cca agg cta cca ggc att	212
Arg Lys Leu Arg His Arg Leu Ser Asn Phe Pro Arg Leu Pro Gly Ile	
25 30 35	
cta gct cca gaa act gtg ctc tta cca ttc tgc tac aag gta ttt cga	260
Leu Ala Pro Glu Thr Val Leu Leu Pro Phe Cys Tyr Lys Val Phe Arg	
40 45 50	
aaa aaa gaa aaa gta aaa aga agt caa aag gca aca gag ttc att gat	308
Lys Lys Glu Lys Val Lys Arg Ser Gln Lys Ala Thr Glu Phe Ile Asp	
55 60 65 70	
tat tcc ata gaa cag tca cac cat gca att ctc aca ccc ttg cag aca	356
Tyr Ser Ile Glu Gln Ser His His Ala Ile Leu Thr Pro Leu Gln Thr	
75 80 85	
cac ttg acc atg aaa ggt tcc tca atg aaa tgt tcc tca tta tct tca	404
His Leu Thr Met Lys Gly Ser Ser Met Lys Cys Ser Ser Leu Ser Ser	
90 95 100	
gaa gcc ata tta ttc aca ttg act ttg cag tta act cag acc cta ggt	452
Glu Ala Ile Leu Phe Thr Leu Thr Leu Gln Leu Thr Gln Thr Leu Gly	
105 110 115	
ctg gaa tgc tgt ctt ctc tac tta tcc aaa act ata cat cca cag atc	500
Leu Glu Cys Cys Leu Leu Tyr Leu Ser Lys Thr Ile His Pro Gln Ile	
120 125 130	
ata taaactctca gccctgctgc aaagcctttc cagaaaaata aaaatggttg	553
Ile	
135	
aaaaggcaat tctgctacca atgactgttt aagcccagcc aagtaactga accattccaa	613
cttcaattta cttatgaaaa gaatttgatg atgtaggagg ttattttcaat tctaaaatac	673
aaacccatgt tgatctttct caatcttgaa ctcatagatt attatctatt atctcaattt	733
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atgttcaagt catgcctgag tcaagagttg aggagacatt acaatgtgta atggaaacca	973
aggaaagtga aactttggat aagtggggac tagtgtattt atatatttaa ttgatttctg	1033
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 ctttcttcc tttgtctgtt tcttgctccc agaccaaggc actgacgaca gtactgatac 2053
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<210> 86

<211> 135

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 86

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			20					25					30		
Pro	Arg	Leu	Pro	Gly	Ile	Leu	Ala	Pro	Glu	Thr	Val	Leu	Leu	Pro	Phe
		35					40					45			
Cys	Tyr	Lys	Val	Phe	Arg	Lys	Lys	Glu	Lys	Val	Lys	Arg	Ser	Gln	Lys
	50					55					60				
Ala	Thr	Glu	Phe	Ile	Asp	Tyr	Ser	Ile	Glu	Gln	Ser	His	His	Ala	Ile
	65				70					75					80
Leu	Thr	Pro	Leu	Gln	Thr	His	Leu	Thr	Met	Lys	Gly	Ser	Ser	Met	Lys
				85					90					95	
Cys	Ser	Ser	Leu	Ser	Ser	Glu	Ala	Ile	Leu	Phe	Thr	Leu	Thr	Leu	Gln
			100					105					110		
Leu	Thr	Gln	Thr	Leu	Gly	Leu	Glu	Cys	Cys	Leu	Leu	Tyr	Leu	Ser	Lys
		115					120					125			
Thr	Ile	His	Pro	Gln	Ile	Ile									
	130					135									

<210> 87

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Primer

<400> 87

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22

<210> 88

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 88

Gly	Leu	Glu	Cys	Cys	Leu
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